KENNISTON W. LORD, Jr., CDP

using
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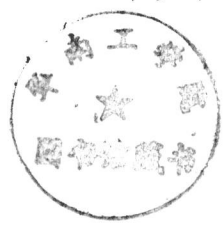# PCjr

USING THE IBM PC*jr*

Kenniston W. Lord, Jr., CDP

VNR VAN NOSTRAND REINHOLD COMPANY

Preface

I encountered my first computer more than twenty years ago. It was a so-called first generation computer known as the UNIVAC File Computer. The room it occupied was as large as a moderately sized firehouse and it took many tons of air conditioning to keep its vacuum tubes from over-heating. It was not uncommon to find a human physically located within the innards of the machine, working on the problem.

Those days are but two decades removed, and the concept of a personal computer has to boggle the mind of those of us who revelled in making 2K, 4K, 8K, and 16K machines "do their thing." In fact, we wondered how we would ever be able to use all the available memory. It wasn't long, however, before the integrated circuit was upon us and those computers—and in fact the second generation which followed it—became obsolete. With the birth of the microcomputer in 1975, the face of computing would change forever. Nine years after that, as this book is being written, the rate of change is nothing short of phenomenal, as one by one new machines are finding placement in a market with a voracious appetite.

It was called the "Peanut," and the speculation was that the machine would be a portable PC. When it was finally announced, somewhat anti-climactically, IBM had officially named it the PCjr. Months before any-body could obtain a machine, a few publishers rushed books into print on the basis of press releases, released or purloined pictures, a little engineering knowledge, and an abundant amount of common sense. For months there was speculation as to what the machine would look like, what its capabil-ities would be, and just how compatible it would be with its older brothers, PC and XT.

It looked, for all to see, as if IBM was entering the "home computer" market just as another well-heeled manufacturer—Texas Instruments—was pulling out, and as the fortunes of yet another home computer—the Atari—were waning. IBM never called it a home computer; they just left it open to speculation with press releases which stated "take home the diskette, not

the computer.'' And then the message became crystal clear. This progeny of the PC family might well be for home computing (supplanting the Radio Shack line); it might well be an educational computer (supplanting the Apple line); but most probably it would be the logical unbilical of the PC empire, and if Tommy was to get to use PCjr at home, he was going to have to wrestle Mom and Dad to do so.

And let's not forget the most important audience—the small business out there with small cash reserves, large record-keeping headaches, and a desire to join the information revolution. Like it or not, PCjr is foremost a business machine, and to that audience this book is dedicated.

The PCjr wasn't my first microcomputer, and certainly not the first about which I have written. It is not as good as a PC or an XT, but it doesn't pretend to be. It does provide more than three quarters of the PC's power for just about one third of the price, however, and that has to give any competitor a run for his money. And IBM has been careful not to cut its own burgeoning PC and XT markets.

The machine is a capable system and a worthy purchase. It is aggressively priced and extremely capable. It does things a little differently, but what is important, after all, is that there is much backup, much compatibility, and it is marketed by perhaps the most reputable computer manufacturer. IBM, by the way, does not itself manufacture the PCjr, as of this writing. As with its predecessors, IBM did the design, built the prototype, and contracted someone else to do the assembly from available parts. They continue to build the better mousetrap.

The reference manuals which accompany the PCjr are well written and extensive, covering certainly far more than we will cover in this book. The PCjr has considerable capability. In this book, we're going to put together small business systems that will work with the PCjr hardware, recognizing that if the reader can be walked through a few learning exercises, and then come up with a workable product for his efforts, he'll be a more knowledgeable and productive microcomputer user and can branch out from there. To that end, we're going to avoid other than casual mention of the machine's advanced features, which are the subject of an accompanying volume, *PCjr Graphics and Sound*. Likewise, we will not delve any more deeply than necessary into the operating system, as it is an extremely capable operating system designed for the full range of the PC family, and providing capabilities which are not really necesary when using the PCjr.

This book will sample several of the common uses of the PCjr computer, including some applications which are nonbusiness applications. Most of the applications will be business-oriented, however, as the PCjr is a business machine. This is not a book of programs, per se, though there are included many useful programs. There will be plenty of books of programs on the

market which will be adaptable to the machine. There will be many books of programs which you can copy. Primarily we will emphasize the development of applications which fit the reader, while at the same time exposing him to some more advanced concepts, such as the operating system. The PCjr is a fantastic machine, and we need to find a way to make it pay for itself quickly. We will teach you about putting programs together, about how to develop applications for your business, and how to use the machine. It'll probably not be all you'll ever need to know about the PCjr, but it'll be more than you knew yesterday.

Kenniston W. Lord, Jr., CDP

Other books by Kenniston W. Lord, Jr.

CDP® REVIEW MANUAL, Third edition
USING THE RADIO SHACK TRS-80 IN YOUR HOME
USING APPLE BUSINESS COMPUTERS
USING THE COMPAQ PORTABLE COMPUTER
USING THE EAGLE PC AND 1600 SERIES
USING THE IBM PERSONAL COMPUTER
USING THE OSBORNE PERSONAL COMPUTER

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Is There a Computer in Your Future?

Forty years ago there was no such thing as an electronic computer, as we know them today. Forty years ago we were embroiled in World War II and electronics development was just coming of age. Although the *concept* of computers had been with us for at least 200 years, it was not until 1930 that an American scientist built the first general-purpose *analog* computer. The war spurred progress, however, and the first electronic *digital* computer was to have been a device capable to calculate artillery shell trajectories. The British produced an electronic device that successfully cracked Axis radio codes. But it would rest with a professor named Howard Aiken, in 1944, to develop the first *information processing* digital computer. The first commercial computer would not hit the market until 1951, founding an industry whose growth limits have yet to be discovered.

The possibility of the modern computer had existed since the eighteenth century, when scientist Joseph Jacquard designed the first automated loom to weave patterns. Another scientist who followed in the next century, Charles Babbage, invented a mechanical calculator that was not only a direct ancestor of today's computing machines, but exhibited all their basic concepts. These were the forerunners of the concepts of computer *hardware*—the physical parts of a computing machine, its nuts and bolts. All the while there were other pioneers who were developing techniques that would ultimately be implemented upon the computer, either in the form of applications *software*—the programs that enable the system to function—or of improvements to the working of the hardware.

For more than 30 years now we have been improving on both hardware and software at a rapid pace. With each technological change, new and interesting devices emerge. We have often developed devices before finding profitable and useful ways in which to use them. It can safely be said, however, that the computer has touched our lives in many ways. Often it may

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seem that we have been reduced to the status of a number for processing through a computer, yet even though we may be unaware of it, the computer has made our lives a little easier. One thing is certain—like it or not, the computer is here to stay. And as of now, there are any number of computers you can purchase, the PCjr being but one of them. Whereas for years we could claim that we didn't understand them, it is now possible to understand not only how they work but how best to put them to use in support of a home, school, or business.

The first microcomputer offered to the public was the Altair 8800 in 1975. It was a kit and not very successful, but it did open up the market to the hobby computerist. Recognizing a trend in consumer electronics, two more manufacturers became involved, and in 1977 the TRS–80 Model I (Radio Shack) and the Apple II (Apple Computers, Inc.) were introduced. The former was a large company already in the consumer electronics business. The latter was a couple of young men working from a garage. Both devices met with phenomenal success. Many manufacturers climbed on the bandwagon; some fell by the wayside, such as IMSAI; some have been marginally successful, such as Compucolor; and some have been successful on a grand scale, such as the IBM Personal Computer. The PCjr is targeted at more than a single segment of the market. One of those, the business segment, will make this machine a success in its own right.

The PCjr is a fantastic microcomputer and represents a major advance in compactness and compatibility. It is the younger brother to perhaps the most popular microcomputer to find its way to market. IBM has incorporated in this machine more capability and different capability than any other microcomputer manufacturer.

A GLIMPSE AT THE FUTURE

Today it is possible, using commercially available services, to send your correspondence by electronic mail. Some companies are already doing that with communications networks. The U.S. Postal Service has begun a form of Electronic Mail Service (EMS), which will function similarly to the Mailgram service currently being offered. There are also the services of MCI, Inc., but even those will change as electronic mail exchange ultimately replaces paper exchange. You'll write a letter on your microcomputer, transmit it, and the letter itself will appear on the computer of the recipient at some distant point, having traveled through the telephone or satellite network. The response can appear on your computer within minutes. It is possible that the charge for such a service will be small in comparison to postal or long-distance telephone rates. One advantage among many might be guaranteed delivery at very competitive prices in comparison to other forms

of guaranteed delivery. We are beginning to see some evidence of such message-handling procedures now, with the appearance of computerized bulletin boards throughout the country. There are also a variety of services that will provide information directly to the computer—agricultural news and information, stock market news, time sharing networks, and the like. One company near Boston now actively advertises that you can call their computer with your computer to determine what job openings exist.

People without microcomputers would be able to receive messages through Mailgram-like services or through one of the high-speed hand delivery services, such as Purolator. Junk mail could be screened out by blocking it with codes given to a computer program. Although advertisers might have some reservations about the process, this feature would allow individuals to exercise some control over incoming mail and manage their time more profitably. They might decide to have the computer produce a list of their correspondents to determine which mail to read first. In fact, it may become possible for a home or a business to read all correspondence and present only the most important items for viewing. The next logical step would be to have the computer automatically reply to routine correspondence, based upon guidelines prepared by the individual.

Using your PCjr, you would be able to prepare a single invitation and have the computer distribute it to potential guests via their own home computers. They, in turn, would be able to reply in a matter of minutes. The same concept could be extended to business teleconferencing. Such conveniences are for the future, of course, but it is a realistic view of the future. Even now, you can use a micro to remind you of birthdays and anniversaries. You can even use it to generate nearly identical letters. One day it will enable you to order that new outfit from Sears, a special tool from Black & Decker, your groceries, or whatever. Coupled to a standard television set, your computer will enable you to view these purchases before you buy them. Think of the possibilities the computer offers to those people who are housebound. In fact, strong evidence indicates that more and more work will be done at home with a micro interfaced to a larger computer. Trips to the office will then be the exception, not the rule. It's called "telecommuting." The same can be said for specialized education.

The electronic funds transfer system (EFTS), already in existence, will find its full implementation in the microcomputer. Using EFTS, you'll be able to complete both a purchase and all the financial work at the same time. The sequence of events will work like this: any purchase will result in the purchased product being sent to your home or business establishment, as applicable. The act of the purchase will cause funds to be transferred from the appropriate bank account directly to the bank account of the supplying firm. At that point, that firm's computer will take over, keep-

ing its books, accounting for its inventory, etc. The microcomputer will allow you to have more control over the process, providing reports of purchases, alerting you to the availability of bargains, and so forth. In other words, the micro will be able to do the shopping.

These conveniences apply equally to the home and small business. The very same activities required of General Motors are also required by Acme Machine Repair; only the scale is different. GM must maintain a payroll. So must Acme. GM must purchase raw materials. So must Acme. GM has an assembly line to schedule. Acme, a large machine repair company, also requires some scheduling. GM must plan its cash flow. Acme has been planning its own with pencil and paper, but could well use a computer. GM must track its payables. Acme has bills to pay, as well. And so on and on. The point is that microcomputers can provide the capabilities of a very large business to the Mom and Pop store on the corner.

Whole libraries will be placed ''on-line'' to microcomputers. Your Johnny will be able to research his paper at the country's largest libraries. Lawyers will be able to subscribe to research facilities, such as Westlaw, saving them hundreds of hours of investigation. The ability to capture the best of what others have already accomplished will be at your fingertips.

For a number of years, computers have been the basis of ''word processing systems,'' used until now exclusively in businesses, and large businesses at that. A microcomputer will put word processing at your own beck and call. You can do form letters, produce manuscripts like this one, and maintain mailing lists. Students will love the ability to produce letter-perfect documents. We've advanced so far that there are even automated dictionaries that check each word entered for correctness of spelling and grammar.

What does the proprietor of a small machine shop have in common with Johnny's mother? Both are responsible for someone who needs to learn. For Johnny, a microcomputer can be a tireless tutor to train him in his multiplication tables or his deductive reasoning through scientific analysis. For the machine shop proprietor, a microcomputer can provide a tool for the job education of his employees. Using microcomputers as a teaching device is one of their best applications and we will live to see the time when it will be possible to check out a tutorial program from a library as easily as it is now possible to check out a book.

The computer will be an integral part of the design of the home of the future and will provide a variety of services for its management. It will be installed much as heating or plumbing systems are installed today. It will take over the kitchen functions of food storage, preparation, and cooking. It will provide security functions, from screening visitors to locking doors at predetermined times. It will be applied to energy conservation, selecting forms of energy to be used in terms of cost and comfort. Not least, it will become a handy tool for entertainment.

You probably would not want the computer used for entertainment in a small business environment (or at least to let your employees know it could be), but there will be plenty of work for it to do. This book discusses in detail some of the things the computer can accomplish at work. If you want to stay at work after hours to play chess against the computer, who would mind? But you should not purchase a microcomputer for home or office for the sole purpose of playing games. Less expensive devices are available for that. Just remember that there are quite a number of things the computer can do for you in a business environment which are equally applicable to the home.

MONEY MANAGEMENT

Logging Checks

Needless to say, every check you write will not automatically appear on your computer. You'll have to enter such information as it occurs. The computer *will* keep an accurate balance of your account, however. To be sure, you could do that with an inexpensive calculator, but consider how much time and expense you could save if, at the end of the year, your computer tells you precisely how much sales tax you have paid and how much you have spent for medical expenses, auto repairs, etc. These necessary details for itemizing expenditures on your tax report could result in savings that alone would justify the purchase of the computer. In a small business, your accountant will insist that such costs be itemized, because they are part of the cost of doing business.

Balancing the Checkbook

A computer can post returned checks and then compute the balance automatically. We have been moving for some years now toward what has been termed a "checkless society." In time, thanks to the microcomputer, the use of checks to effect transactions may disappear altogether. Although the checkless society will not be with us for some time, for now it's nice to have a microcomputer to take over the balancing headaches we face every month. That's one chore a small businessman can do without. Even if he hires a bookkeeper, the latter's task can be greatly simplified by a microcomputer.

Investments

If you have an interest in stocks or bonds, the microcomputer will allow you to manage your own portfolio. Having your own device to compare investments, returns on investments, and potential areas of investment could

not only save brokerage fees but allow you to plan your investment programs more thoroughly. If your investments are in the form of property—or if your small business is the purchase and operation of property—a microcomputer can provide the necessary procedures for tracking rents, scheduling repairs, planning escrow accounts, comparing interest rates on available money sources, etc. Computer programs already exist to assist you in such planning.

Cash Management

A computer can advise you when bill payments are due and also specify the optimum time for making those payments. Many firms offer terms for early payment, such as a 2 percent discount if the invoice is paid within 10 days. Since money can be saved by keeping track of when those discounts are available, you can draw interest until the final day when the invoice must be paid.

Other Business Uses

Anything that can be counted, scheduled, sequenced, or controlled is a likely candidate for the microcomputer. Accounts receivable, customer files, salesman records, payroll, commissions, raw material planning, business forecasting, and general ledger accounting are just a few of the jobs a microcomputer may be applied to in a business setting. So you're not GM—perhaps you're only Acme—but you must still do these things, even if some of them only intuitively.

Other Personal Uses

You can use the microcomputer to keep track of your car's mileage, using this information to determine your operating costs, schedule necessary maintenance, and account for taxes. You can use it to plan trips and give cost-effective alternatives. You can use it to shop for groceries, keep inventory of the pantry or the freezer, prepare the meals, schedule critical tasks (like the kids' chores), monitor heat costs, and so on. If you must supply heat to rental property, monitoring the gallon usage can be extremely important.

Education

Don't overlook the tremendous value of microcomputers for education, both at home and on the job. As educators become accustomed to their use, entire learning modules similar to those now used by schools will be

developed in a variety of subject areas for home and business applications. The computer has tremendous capabilities for subject exploration and repetitive drill. Unlike human teachers, it never gets angry or tired. And even though many things cannot be computerized—one could never learn how to handle dynamite using the computer, or season a steak, or play a piano—a micro can certainly be used to tutor a child in geography, a young man in auto mechanics, a young lady in pattern-making, an adult in computer programming or systems analysis, and a retiree in tracing his genealogy. It can even help a part-time writer do his thing. I know.

The song is endless, and there will be enough variations on the theme for people to find the microcomputer up to the challenge for decades. Unquestionably, it will become ever more capable. What I can now hold in my hand, twenty years ago I would have had to walk into. Twenty years from now will hold many more miracles, and our children will find the computer to be as commonplace as television. Some who read this book will remember, as I do, a time when there was no television, when we wondered if our grandparents had had automobiles when they were kids. Read on.