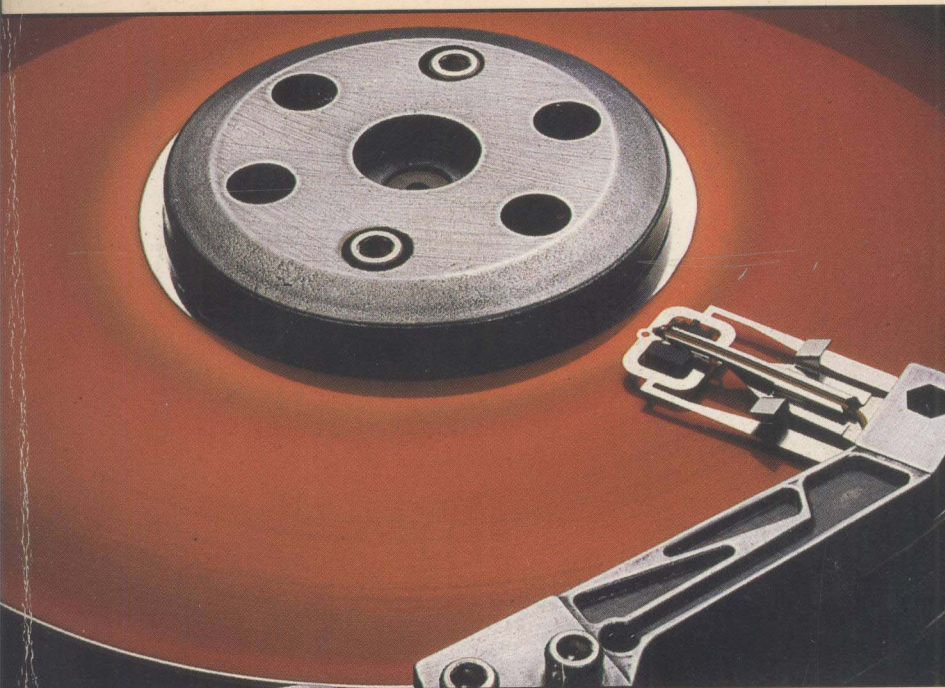


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# The Complete IBM Personal Computer:

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to Hardware  
for Expanding the  
IBM PC, XT, AT,  
and Compatibles*

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Seth Novogrodsky  
Frederic E. Davis  
and the Editors of PC World



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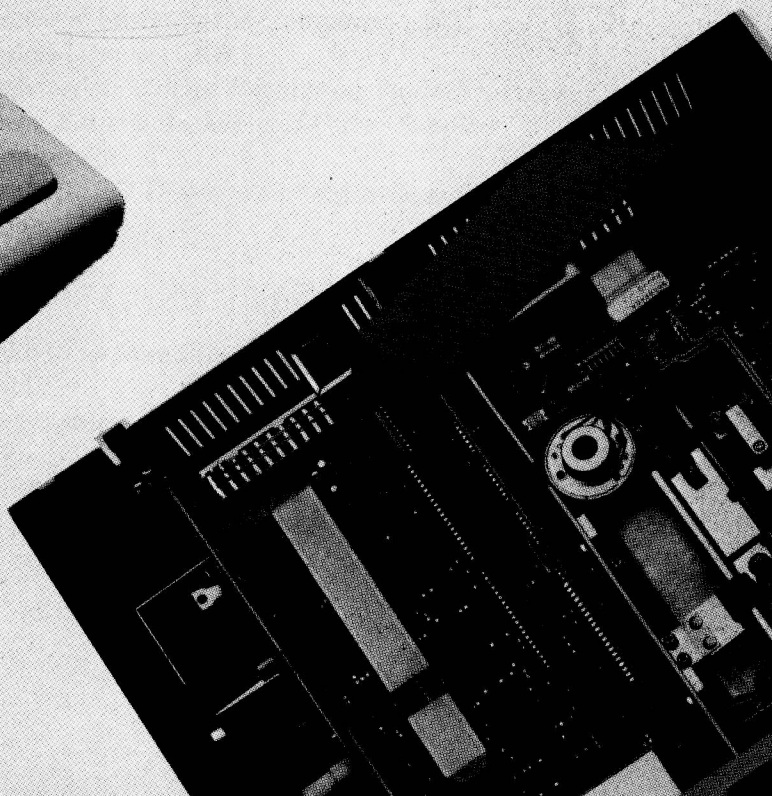
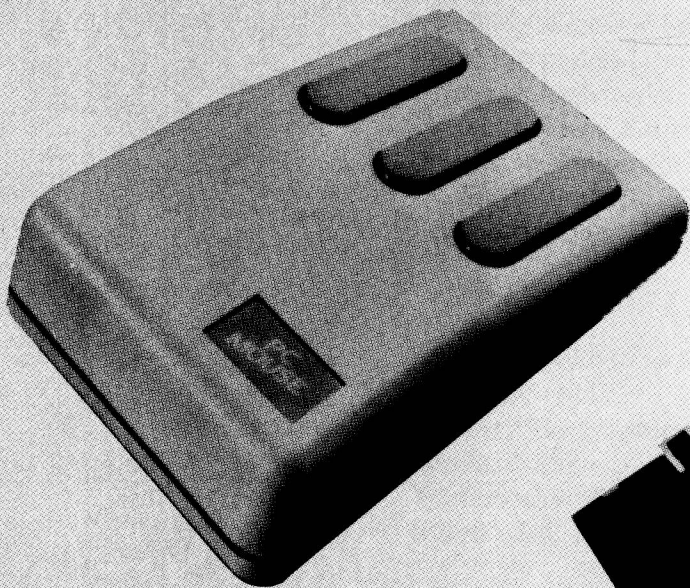
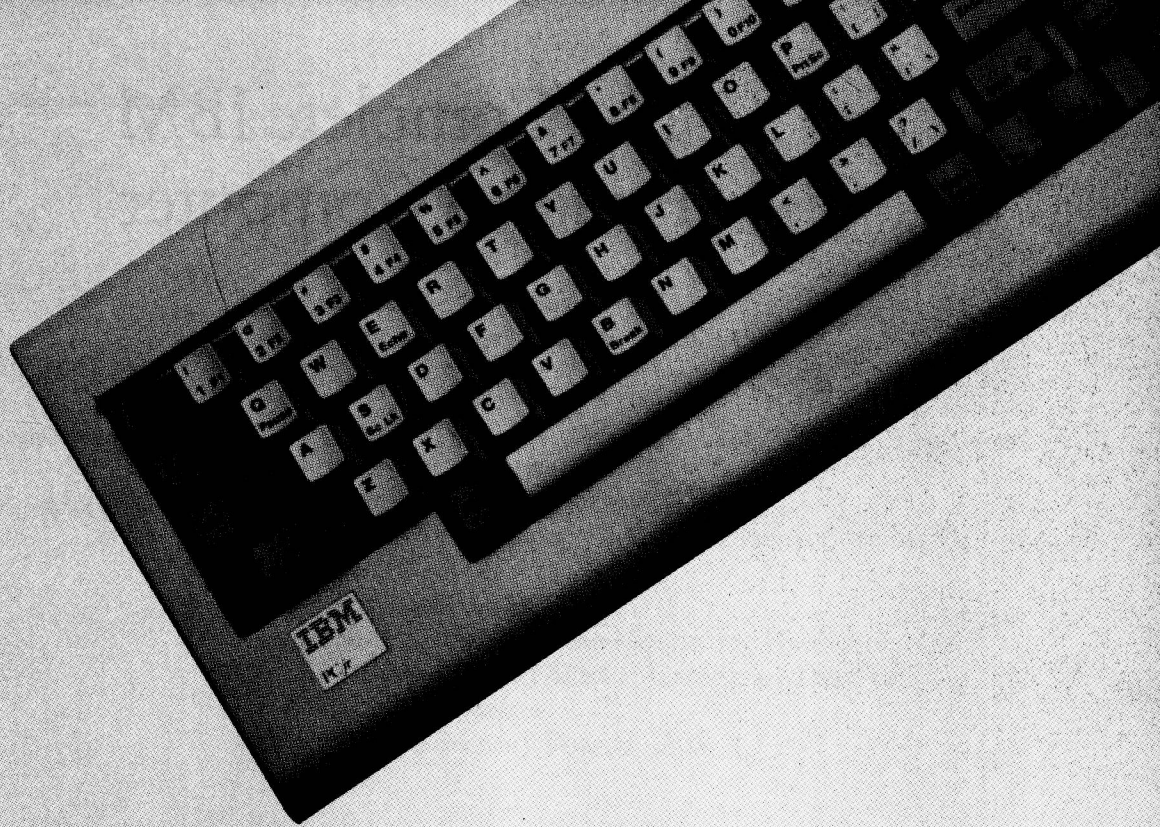
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# Introduction



Having picked up this book, you are probably at the stage in personal computing where you want to use your computer system to do more tasks, whether they are personal or professional, simple or complex. *The Complete IBM Personal Computer* is for individuals and professionals who want to *expand their expertise* on the IBM PC, XT, Portable, AT, and IBM compatible personal computers.

Expanding your expertise does not necessarily require learning more about the PC's hardware or about hardware you want to add to it, but learning about hardware components will unlock secrets that increase your expertise dramatically. At the very least, what you learn will give you the tools to do your personal computing more comfortably, the way you want to do it, with increased efficiency.

But, how can you plan your system to match your expanding needs? The first step is to find out what products and technology are being developed for the IBM PC. To satisfy your immediate needs, you may only need to install a new circuit board, a modem, or data storage device. This book introduces you to the range of hardware products manufacturers have developed for the PC. You will learn about the many categories of products (such as printers) that enhance the PC,

what the products do, the key distinctions between products in each category and why certain products may be best suited to your needs.

**Compatibility** This book concentrates on hardware developed specifically for the IBM PC, XT, Portable, and AT, and for those machines that are said to be “hardware compatible.” “Hardware compatible” means that the computer can accept expansion boards designed for the IBM PC. Three examples of compatibles that can accept PC boards are the Compaq portable computer, the ITT Xtra, and the Columbia MPC. Note that the PCjr does not fit into this category, and the PC AT is not compatible with all the boards designed for the PC.

If you own a PCjr, however, you will discover that much of the information in this book is relevant to you. For example, virtually all of the printers, external modems, and composite and RGB monitors discussed in this book are compatible with the PCjr. Other hardware components such as input devices and accessories are also compatible with the PCjr. Moreover, the hardware expansion products for the PCjr are very similar to the hardware expansion products for the PC, and the same criteria are often used to choose the best product. We do not, however, discuss products designed only for the PCjr in this book.

The IBM PC AT is different from its cousins. It has a different hardware architecture, a different central processing unit, and different expansion capabilities. In this book, we discuss some products that are designed specifically for the AT and other products specifically designed for the PC, XT, Portable, and hardware-compatible machines. Fortunately, the vast majority of the hardware described in this book is compatible with all these machines. If you are using the AT, though, you should realize that some boards mentioned here may not be compatible with your machine, in particular, boards that contain memory chips. Often equivalent boards for the AT exist with the same features.

**Comprehensive Understanding** This book covers all categories of products and presents example products from each category. Space does not allow a description of every product in a category, for example, every memory expansion

board available for the PC, XT, Portable, and AT. However, representative products in each category are discussed. Their selection was based on their overall quality and on their general acceptance among PC users. Many products not mentioned here are also high quality and popular.

By concentrating on selected products, we have provided a thorough understanding of the chief characteristics of a product and the key distinctions among products. Although the products selected are high quality, we occasionally make recommendations for products that consistently have proven to be reliable and represent unusually good values.

***Timeliness*** We have made this book as timely as possible. Yet, manufacturers are changing their product lines at a surprising pace. During the short period of creating this book new and exciting products for the IBM PC line appeared. For the latest information about PC compatible products, we recommend that you consult a current issue of *PC World* magazine or other relevant magazines. Because hardware products and specifications frequently change, we have made a special point of focusing discussions on explanations and concepts that do not change.

If a new product is interesting to you, find similar products in this book and compare the new with the old. Some of the tried and true older products will continue to outdistance new products because they have proven reliability. On the other hand, new products offer cutting edge improvements over existing products. To help you get the information you need, we have provided the address of most of the major suppliers of PC compatible hardware products in the Appendix.

***Organization*** This book is organized around categories of products such as plug-in boards, monitors, printers and storage devices. Chapter 1 presents an overview of the IBM PC, XT, Portable, and AT, and provides background concepts for the major topics. Chapter 2 focuses on expansion boards, perhaps the most common way of increasing the performance of your PC. If you are new to personal computers, we recommend reading the first two chapters before skipping to other chapters.

In Chapter 3, we examine display boards, which allow the computer to produce images on the screen. In Chapter 4,

we review monitors and other display devices. Chapter 5 discusses printers and hardware associated with them. In Chapter 6, we focus on storage devices, such as floppy disks, fixed and removable hard disks, and new technology designed to store large quantities of information.

Chapter 7 discusses computer-to-computer communications devices such as modems, special protocol converters, and local area network adapters. Chapter 8 presents various devices you can use to communicate with the computer, for example, keyboards, mice, joysticks, and bar code readers. Speech, music, and sound-related hardware are the topics of Chapter 9 in which we examine speech synthesis and recognition equipment and computer music equipment.

For hardware that is both sophisticated and designed for unique circumstances, Chapter 10 discusses special purpose hardware such as coprocessor boards, prototyping boards, remote sensing and scientific monitoring hardware, and security hardware that protects confidential information. Finally, Chapter 11 provides a quick rundown of hardware that does not fit into the above categories, such as testing and diagnostic devices, and includes some useful information about hardware troubleshooting.

The Appendix is a handy reference to all manufacturers mentioned in this book.

***A Cautionary Word*** Before getting started, we'd like to offer advice about selecting hardware: Pay more attention to the difference between "good enough" and "not good enough" than to the difference between "good enough" and "the best."

Hundreds of hardware manufacturers and suppliers are offering thousands of products for the IBM family and compatibles. For each application, some products are not good enough, some are good enough, and some may be considered the best. The temptation is to be dazzled by the best. If the product is good enough, however, you should seriously consider it.

Products considered to be the best may be more powerful, and more expensive, than you need. Also, what others consider best is not necessarily best for your application. Consider all the needs and demands of what you expect from your computer and be careful not to buy a more costly product than you really need.