

BOWKER'S 1985 COMPLETE SOURCEBOOK OF PERSONAL COMPUTING

COMPUTERS
PERIPHERALS
SOFTWARE
BOOKS
MAGAZINES
REVIEWS
CLUBS
USER GROUPS
GLOSSARY
CHECKLISTS
AND MORE

The brand-new edition of the most comprehensive guide to personal computing ever! Fully updated, and reformatted with extensive indexes for easier access!

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COMPLETE
SOURCEBOOK
OF
PERSONAL
COMPUTING
1985**



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Preface

Welcome to the 1985 edition of *Bowker's Complete Sourcebook of Personal Computing*! You have in your hands a guide based on the most complete collection of information available on microcomputers, and on any product or organization related to microcomputers. If you're interested in hardware, software, peripherals, magazines, user groups, even other books and directories (indeed, the competition is included), this is the source for you.

In today's turbulent world of personal computers, it is hard to find information, all in one place, about all the aspects of the industry. True, there are software guides and hardware guides; there are books on how to choose a computer, a printer, a software package, an information database, almost any specific topic you can think of. But that information is rarely to be found all in one place. You end up looking through back issues of magazines, trying to find that one advertisement or announcement you remember seeing a few months back. Now, with the *Bowker Sourcebook*, you will be able to quickly find the information you need, on any microcomputer subject, in one handy volume.

AUTHORITATIVE, COMPREHENSIVE, COMPLETE

The information in this book has been carefully selected for you, the user or prospective user of personal computers, from the database compiled by R. R. Bowker Company. This is the most comprehensive and authoritative database available of the microcomputer marketplace. After two years of scouring every magazine, book, press release, and article, and calling and writing every manufacturer, publisher, and supplier to get their latest information (we do it for

a living, so you don't have to), Bowker had covered a significant part of the microcomputer market. But when, in 1984, it purchased rights to the databases and print products of Dekotek (publishers of *Microcomputer Market Place*) and PC Telemart (publishers of *The PC Telemart Clearinghouse Directory* and the *PC/VanLove's* directories), that body of data bloomed into the unrivaled source for microcomputer information. And we still go through every book, magazine, and guide, and keep in touch with manufacturers to make sure that our information is the most complete and up-to-date available.

Bowker has been putting together databases since the early 1960s, when computers took up whole buildings and creating a database was like moving the world. We've been publishing *Books in Print*, which now lists over 650,000 titles from over 16,000 publishers and is found in every library and every bookstore, from that computerized information bank for all those years (it was all done on paper before that). *BIP* is the reference for bibliographic information. If a book is in print, you should find it there; as the United States agency for the International Standard Book Number (ISBN), we are assured of the most complete listing available. And since the ISBN is rapidly becoming the standard in the software industry, that same completeness is assured for software as well.

So when Bowker turned to the job of putting together a database of microcomputing, we were working from a foundation of many years' experience in database and electronic publishing. We knew that just listing every group and vendor involved in the field would do nobody any good. What people want (what *we* want) in a reference book is truly useful information in a truly usable form. To that end, we have provided indexes that will lead you straight to the information you need, whether you're seeking the address of Apple Computer or a list of user groups for the Osborne portable. And when you get there, capsule outlines will give you the key facts about the computer you're thinking of buying, the software package that will help you keep track of your record collection, the printer that will link up to your lap-sized Epson, the database that will give you access to the *Paducah Times* online, or the book that will teach you how to use all these gadgets.

INTRODUCTION TO ACRONYMS

If you don't know what any of those terms in the last sentence mean, turn to the introduction. You will find a short, informative outline of what's what in microcomputing; it has just been updated to make the 1985 edition of *Bowker's Complete Sourcebook* a truly up-to-the-minute information source. It tells you about the new in-

egrated programs, the operating systems that tell your computer that it's a computer (and how to act like one), and the explosion in lap-sized portables.

The introduction will also teach you what all those acronyms mean (like ROM, RAM, ASCII, and CPU), and allow you to make your way through this befuddling (but exciting) world of 8-, 16-, and 32-bit machines, user interfaces, touch tablets, mice, modems, and machine language. You won't move the world when you're done, but you will have a place to stand. If you get befuddled after that, just check out the user-friendly glossary. Most every computer term that you will need is included, from "acoustic coupler" to "word processing."

There is also a handy set of charts to fill in when you're shopping around for hardware and software. They will make it easy to compare the different machines and programs you're thinking about buying, so you can look at all the features laid out in front of you and make an intelligent, reasoned decision about what is best *for you*.

LISTINGS ARE WHERE IT'S AT

The listings are what this book is all about, however, and they are even more useful and informative than last year. We have added indexes, sections, subsections, and categories that make it easier than ever to get to what you need. And when you get there, you'll find even more information. We have talked to users of last year's guide, found out what they liked and what they didn't like, and incorporated the changes that they thought would be most useful. And we have added some other things that we know will be useful from our own experience in building reference works for microcomputers.

WHERE TO FIND REVIEWS

Perhaps the most useful additions are the 3,300 review citations for hardware, software, peripherals, and books. The micro field is a maelstrom, and without some kind of advice, it is hard to know which product is the one you really need (and which one really works). There are references to 3,300 reviews in popular computer magazines, which will allow you to find out even more about the product you're considering.

In this year's hardware section, we have listed more than 750 computers. And where last year they were listed alphabetically by machine, they are now resorted to be listed by product family. You

don't have to look in one place for the Apple Lisa and another for the Macintosh. They're right together, so you can compare a whole product line and choose the computer that is right for you.

We have also put in an index of IBM-compatibles (machines that run most or all software for the IBM-PC), which has become an absolute necessity since our last edition. IBM has become the *de facto* standard in the industry, and just about every software developer is writing software to conform to the MS-DOS standard (the primary operating system used on the IBM-PC). As the IBM dominance has spread, the "PC-clone" market has exploded along with it, resulting in an index of 127 IBM-compatibles in this guide.

As IBM has solidified its hold on the PC market, the trend toward miniaturization has continued, resulting in a blossoming of portables over the past year, both the suitcase-sized variety (transportables) and true lap-sized portables. We have added an index leading you to all of the 168 portables listed.

ON THE PERIPHERY

Last year's peripheral index listed 700 products. This year there are more than 2,500, broken down into thirteen categories. A big part of this growth is in the area of input devices. People are finding more and more ways to get away from the keyboard, to input and access information quickly and easily without typing arcane commands (or any commands at all). So we have broken out the information on input devices into three sections—one on light pens and graphics tablets, one on touch tablets, and another on mouse devices, which are probably the most popular input devices of all. Many computers now come standard with mice, and of those that don't, most have some facility for adding one. Most of the software being written is also set up to take advantage of mice.

Two other subcategories of peripherals list plotters, which allow all those graphics created with the input devices to be printed out in hard copy, and add-on cards, which constitute one of the most exciting developments in microcomputers. They let you upgrade your system by adding circuits that tie in with your existing computer circuitry. You can add memory, communications ports, clock/calendars (with batteries, so your computer always knows what time it is), modems that let your computer talk on the telephone, speech synthesis capabilities that let your computer *really* talk, all by adding on to what you already have, rather than buying a whole new computer.

FINDING FELLOW USERS

An exciting phenomenon that has grown out of the microcomputer revolution is the rise of user groups, computer clubs, and special interest groups (SIGs). These groups, devoted to special machines, software packages, operating systems, program languages, or to the whole field of micros, have proliferated incredibly since Steve Wozniak showed off the first prototype Apple to the Home Brew Computer Club. They are one of the best sources of information and advice, and are also a great place to trade equipment and ideas, and to get free software.

Last year our user group section included 1,100 organizations; this year there are over 1,800, with all the essential information on addresses, contact people, phone numbers, and annual dues. In addition, there are 500 in-depth profiles, covering the machines, software packages, operating systems, and programming languages each group supports, if they publish a newsletter and if so, its name, whether they have an electronic bulletin board, and how to get in touch.

The user group section is divided by state, so you can find out about the organizations in your area, but, of course, all of this information is also cross-indexed by all the above categories. You can look up a club and find out the name of the newsletter it publishes; if you want a list of all the user groups that support Osborne computers, you can get that, too. This may prove to be the most valuable section of the guide, because it leads you to an endless source of information, in human or electronic form.

Another seemingly endless source of information is the large number of computer magazines that have emerged. This year we list 545 magazines, as compared to last year's 200. Although most people are expecting a shakeout in the micro magazine market, dozens or hundreds of these publications will be around for some time to come. Nobody would want to subscribe to all of them (unless, of course, you're putting together this directory). The listings provide information on each of the 545 magazines, which machines they cover, their subscription rates, and how to subscribe, so you can make an intelligent decision about which you want to see.

And last but not least, what about all those other books out there? At last count, the *Books in Print* database contained over 6,300 titles relating to microcomputers, all listed in this book. Along with user groups and magazines, these are the prime information sources on micros.

Like magazine publishers, book publishers have gotten into the

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microcomputer market in a big way. Textbook, technical, trade, and computer publishers are all producing books at an amazing rate. More than 2,500 of the 6,300 books listed were announced and/or published in 1984. The advantage of this spate of computer books, of course, is that you can find a book on virtually any obscure subject relating to microcomputers (How to Keep Track of Your Butterfly Collection; Break Dancing on Your IBM—you name it), but it also means that there are probably two or more books on the subject you're interested in. This publishing overkill makes the review citations provided in *Bowker's Complete Sourcebook* an essential resource. You can go to popular computer magazines and find out what experts have said about the book, and about other books like it.

If you have trouble finding the magazines, however, there is another route to go. The listings of on-line information services (consumer databases) will lead you to at least one that will give excerpts, abstracts, or whole articles from those magazines. So, you can read the reviews on-screen in your living room, print them out, or have them printed out by the database vendor and sent to you.

Many people at the R. R. Bowker Company worked on this publication. Peter Simon, Vice President, Data Services, Andrew H. Uszak, Senior Vice President, Electronic Publishing Division, Gertrude Jennings, Executive Editor, Product Research and Development, and Ernest Lee, Manager, *Books in Print*, were responsible for the overall design and planning. Ernest Lee directed the data acquisitions and editorial development of the hardware, review citation, book, and club/user group information with the assistance of Sonja Wright, Project Coordinator, and Gene Gold, Karen Mayer, Beverly Palacio, Albert Simmonds, John Thompson, Assistant Editors. The Software Database section was prepared by Emilia Tomaszewski, Manager, New Database Development and Production, and Michael Olenick, Product Coordinator. The Magazine and Consumer Database section and the Glossary were prepared by Scott MacFarland, Managing Editor, Leigh Yuster, Senior Product Manager, and Richard Oosterom, Product Coordinator. Preparation of the Wholesalers and Distributors and Mail Order Houses directories was done by Brenda Sutton, Senior Product Manager, and Anne Wilson, Project Manager. Thanks are due to the Systems Development staff: Mike Gold, Chi-Yun Luo, Lisa Medvin, Lourdes Santiago, Phil Pan; *Publishers Weekly* staff: Joanne Tangorra, Steve Roth, for their revisions of the introductory material; consultant Barbara Preschel, for her recommendations on indexing techniques; and all the other people who contributed to this effort.

The R. R. Bowker Company (A Xerox Information Company) has made a concerted effort in collecting and editing the data included in *Bowker's Complete Sourcebook of Personal Computing 1985*. The Bowker Company, therefore, does not assume and hereby dis-

claims any liability to any party for any loss or damage caused by errors or omissions in *Bowker's Complete Sourcebook of Personal Computing 1985*, whether such errors or omissions are the result of negligence, accident, or any other cause.

With the information that the Bowker editors have compiled, you will find the stormy sea of microcomputers much easier to navigate. They have worked together to make sure that this book is the most useful guide available—that it is informative, complete, accessible, and authoritative, so that you can stop trying to find things out *about* micros and start doing things *with* them.

Happy computing!

Introduction

Andrew H. Uszak and Steve Roth

In the late 1970s, or even into the early 1980s, it was rare to overhear someone discussing personal computers. Microcomputers were being used primarily by research-, mathematics-, and electronics-oriented professionals, certainly not by the average person. Today the personal computer is discussed at family gatherings, school functions, business meetings, and almost any other activity one may attend. In January 1983, *Time* magazine named the computer "Man of the Year." Not only is the computer here to stay, but in one way or another it will have an impact on almost every one of us.

There is no doubt that the development of the chip in Silicon Valley, the high technology area of California, marked the beginning of the personal computer revolution. At that time, computer professionals were working with so-called minicomputers, developed by American and foreign companies, that were able to outperform the massive computer systems of only a few years earlier.

Not long ago, pocket calculators and electronic games became the rage for Christmas gifts, and the beep of an electronic game began to be a familiar sound on airplanes, buses, or anywhere someone had time to while away. Other predecessors of the personal computer were the various games that could be hooked up to a TV set, allowing up to four people to play Ping-Pong, tennis, hockey, and other games using simple controls. Only a few years back, popular computers such as Atari, Apple, and Radio Shack were offered to the public as machines on which sophisticated games could be played. Some software packages were available that boasted the capability to manage household finances, recipe files, and household chores on the computer. The prices of these small microcomputers have come down considerably since these initial offerings. Now it is possible to buy a personal computer with 16K of memory (which will hold about 8 pages of double-spaced, typewritten text) for less than \$60.

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Today most elementary and high schools offer computer courses using various models of personal computers. At a number of colleges and universities, it is mandatory for students to buy a personal computer upon entering certain courses of study. In the business world, many companies have made microcomputers available to their employees to help them become more effective in their jobs. Business professionals have bought personal computers to use at home to maintain and improve their personal and professional skills, and a growing number of executives have them on their desks.

Current trends indicate that the end of the technological development of personal computers is nowhere in sight. Development is continuing in integrated circuitry and in peripheral equipment. Chips with enhanced memory capabilities are now being used to put the power of superminicomputers on a desktop. Flat panel displays are being used more and more, making traditional cathode ray tubes (CRTs) a bit like dinosaurs. Dozens of now available portable computers can be carried around like an attache case, or *in* an attache case. Some can be operated by batteries. Even hand-held computers are in the making, with limited capability compared to desk models, of course, but look for that to change as well.

The main result of all this technological development and rivalry is that machines are getting cheaper and more powerful at the same time. For the buyer, that means more machine for your money.

SHOULD YOU BUY?

There are about as many reasons as there are people to justify the purchase of a personal computer, and it has become increasingly clear to consumers, whether professionals, businesspeople, educators, parents, or students, that they might have a use for a micro.

With all of the accounting, inventory, spreadsheet, mailing list, and other software currently available, including packages that integrate a number of functions, many areas of a small business can be improved with the use of a personal computer. Better controls can be developed for inventory, accounts receivable, payroll, taxes—many of the functions previously available only to large companies with large computers.

Should it become necessary, custom software can be developed for you by an expert, tailored to your business, or an off-the-shelf package can be modified to better respond to your business needs. And as programs become more user-friendly and artificial intelligence language translators become available, the nonprogrammer will more and more be able to write his or her own programs. As your business grows, you can add to your system or convert to a

larger computer, assuming that the initial purchase is properly planned.

Almost any parent who can afford a personal computer can justify its purchase, if only for the advantages it will provide for the children. The market for educational software, for both home and classroom, is growing rapidly, and there is a wealth of software to take advantage of, from spelling to mathematics to access to encyclopedias and other important learning tools. Software is available for preschool to graduate study, and ranges from programmed instruction and simulations to study courses for the SAT. Even games are becoming more and more educational in nature.

Adults, too, are finding many uses for a computer at home; they can, for example, keep clear and concise records of household expenses and budgets, stock portfolio information and other investments, and hold mailing lists of friends and professional contacts. Perhaps the cook of the house would like to keep a file of recipes with measurements noted for varying numbers of dinner guests. And as people use computers increasingly in the office for financial analysis, planning, scheduling, and other business applications, a computer at home can supplement and enhance office use and professional growth.

HOW TO LEARN ABOUT PERSONAL COMPUTING

We are all bombarded with various types of advertising every day, expounding the features of one computer over another. Almost every magazine and newspaper carries advertisements for all types of personal computers. And micro companies, both hardware and software, are increasingly using television and radio to reach consumers. The sales pitches are replete with the various buzzwords, which seem to change every week, and it is not easy to sort through the claims and promises of each and every vendor offering the best system. The best defense is to be familiar with the most common terms being bandied about by the industry. You don't have to become an expert, but you should know the lingo. There are many levels of computer literacy. The next step is to find out what a computer can do.

A good way to learn about personal computing is to take advantage of the wealth of information in computer books and magazines. Many are listed in the indexes of this book. Read about the latest developments in hardware and software, either in some of the more general magazines, or if you have a particular machine in mind, look for a publication that is "machine-specific." Books and magazines are available for all the popular machines and applications,

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whether home, educational, or business, beginner or hacker. Most magazines offer information to the beginner as well as the advanced user, while books are generally written for users with various levels of understanding and expertise.

One of the best ways to learn about personal computing is from a friend or through a job. Recently, an engineer, after hearing so much about computers, felt that it would be to his advantage both personally and professionally to acquire one. He visited a computer store and spoke with a salesperson, who made everything sound so easy. He was sold on the premise that all you had to do was to buy the computer, plug it into the wall outlet, press the button, and it would run. Well, it wasn't as easy as that. The engineer made a number of mistakes, the biggest of which was to assume too much. The system he bought was fully equipped with all of the needed peripherals and cost about \$4,000. After working with it, for several weeks, he became very discouraged and offered it for sale at a price significantly lower than what he had paid. Fortunately, before the sale a friend showed him that he could use the system if he had proper guidance and instruction. The friend was also an engineer and was able to share some of his own programs, as well as advice on several software packages. Now the engineer is proficient in the use of his computer and a strong advocate of personal computing.

The local computer store can be a good source of information if the salespeople are knowledgeable and can give you demonstrations. Unfortunately, this is not always the case. Many salespeople have a good working knowledge of hardware and software, but others have not had sufficient technical training on specific personal computers. Their main purpose is to sell hardware and software, so they may not be as objective as we might like. Some salespeople are not experienced in demonstrating software packages and use the same routines over and over for all types of prospective customers. Also, the average computer store can stock only a limited number of brands of computers, peripherals, supplies, and software. One store may not carry the make that a friend has shown you or that fits your needs. If possible, visit several stores.

Many computer clubs, user organizations, and special interest groups (SIGs) have been formed by interested users with various levels of expertise all over the country. Their purpose is to share information, problems, and experiences related to different systems and software. Some of the clubs are for specific machines, some for programming languages and software packages, others for general interest. These groups are one of the best sources of technical information, as well as facts about quirks in particular machines and software packages. See the user group section in this book for the clubs in your area, or ask at your local computer store. Among the

many advantages of membership in such a club are group discounts with certain suppliers for equipment and supplies, and access to software developed by club members. A novice can probably learn more by joining a computer club than in any other way.

You can also learn about computers by attending computer concepts classes. Computer stores offer evening courses in computer concepts as well as programming, often at little or no cost. Adult education courses are available at most local high schools and community colleges, and there are credit courses at colleges and universities. Classes may take some time, but why rush into buying when you could end up making a wrong decision?

You may have the opportunity to learn computer use at work, through training provided by your employer or simply by sitting down and trying one out. Companies often have a microcomputer expert to help users in-house, as well as classes, on-disk tutorials, videotapes, laser disks—you name it, some corporation has got it. Once you have achieved the basic level of computer literacy, higher levels will be achieved progressively as you learn to use computer software, and ultimately as you learn to program. However, to maintain a high level of computer literacy, you cannot stop there. As new hardware and software are developed, try to keep up with the state of the art.

WHAT IS A COMPUTER?

In its simplest form, a computer is an electronic machine (hardware) made up of several working parts. It is a “dumb” machine, however, that can do nothing without the proper instructions (software) to make it run. At the heart of every personal computer is a central processing unit (CPU)—the computer’s brain—which fits on a tiny piece of silicon about the size of a thumbnail. The CPU controls all the functions of a computer configuration—the keyboard, monitor, disk drives, printer, and other peripheral equipment—once again, with the help of software.

The micro also has a memory to store data and programs. The size of the memory is specified in kilobytes. One kilobyte equals 1,024 bytes, each of which equals 8 bits. A bit of information is a single digit, either on or off. Just as you can make a picture by putting enough black and white dots together, you can put lots of bits together to make words, numbers, spreadsheets, and graphics. Eight bits equals one byte, which is enough information to represent a character—an “O” or an “E” or whatever; 1,024 of these bytes make a kilobyte (1K). Why is a kilobyte 1,024 bytes instead of 1,000? Because everything in computer land works in powers of 2; 1,024 is 2

to the 10th power. A 2K equals about one page of double-spaced, typewritten text with liberal margins.

Typically, personal computers have two types of internal memory: read-only memory (ROM) and random-access memory (RAM). ROM cannot be changed or altered or used for storage by the user; it can only be read by the machine itself. It contains a set of instructions placed there to direct certain functions that are activated when the computer is turned on. These instructions can include many things. On some computers, actual applications or programming software is included in ROM, so it is available as soon as the machine is turned on. On others, ROM contains just instructions to load the operating system, which is the software that tells the computer what it is and what it has and what to do with it.

RAM, the random-access or user memory, can be altered, added to, or deleted by the user. It is called random access because the computer can pick information out from any part, it does not have to go through from beginning to end looking for something. RAM is used both to hold the program that is being used and to hold the information that is being manipulated by the program. If you load in an applications program that takes up 26K of RAM, and your computer has 64K, obviously, you have 38K left to build spreadsheets, write programs, or create graphics. If a program takes up 60K, there is not much room left for work. If it takes up 65K, it won't even load into memory.

Must You Learn To Program?

The answer is definitely NO! Thousands of programmers are spending thousands of hours writing software that is powerful and easy to use. Software packages are available for the most obscure and improbable tasks, as you will see by looking through the software section of this book. There are word processing, financial spreadsheet, and database management packages that can be used for a variety of applications, but there are also packages to keep track of your stamp collection, figure the interest rate for different kinds of mortgages, chart your biorhythms, or play all kinds of games, from arcade types to chess.

Nevertheless, in some situations you might need software for a specific application that has not been written. Or you may just get hooked on the machine and want to know how to control it. Learning to program can be difficult, but it is getting easier fast. There are a number of programs available that write programs that ask you questions about what you want to do, then take your answers and write programs in one of the many programming languages available.